

**REMARKS**

The Office Action dated November 25, 2005, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

In this application, Claims 1-2 and 5-15 are pending, with Claims 1, 8, and 12 being independent. Claims 3-4 have been canceled, and Claims 8-15 are newly added, based upon the indication of allowable subject matter in Claims 3-6. No new matter has been added.

**Allowable Subject Matter**

Applicants thank the Examiner for the indication that Claims 3-6 contain allowable subject matter. This Amendment is being presented in an earnest attempt to place this application in condition for allowance.

**Rejection Under 35 U.S.C. § 103**

Claims 1, 2, and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shibuya (JP 11-297579, published 10/29/1999). Applicants respectfully traverse this rejection.

The presently claimed inventions relate to a process for producing an electrode for an electric double layer capacitor, the process including joining an electrode forming sheet including activated carbon, conductive carbon, and binder and a collector sheet having a conductive adhesive on its surface, and containing alcohol based solvent having 2 to 10% by weight of the electrode forming sheet in the electrode forming sheet while joining the collector sheet and the electrode forming sheet. See Claim 1.

The presently claimed inventions aim to provide an electric double layer capacitor having sufficient joining strength between the electrode forming sheet and the collector sheet, using a reduced amount of conductive adhesive. Absorption of the conductive adhesive into the pores and gaps in the surface of the electrode forming sheet is reduced by the presence of the alcohol-based solvent at 2-10% by weight. Applicants have discovered that decreasing the weight of the conductive adhesive absorbed into the electrode forming sheet results in increased electrostatic capacity of the electric double layer capacitor.

As set forth in MPEP § 2142, three basic criteria must be met in order to establish a *prima facie* case of obviousness. First, the prior art reference must teach or suggest all the claim features. Second, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Finally, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must *both* be found in the prior art, and not based on Applicants' disclosure.

**Shibuya Fails To Disclose Or Suggest All Claim Features**

The Office Action states that Shibuya discloses a process for producing an electrode for an electric double layer capacitor, the process comprising joining an electrode-forming sheet including activated carbon (abstract), conductive carbon (carbon black-paragraph 0002, abstract), and binder (polytetrafluoroethylene-paragraph 0004, abstract) and a collector sheet having a conductive adhesive on its surface

(abstract). As was admitted in the Office Action, Shibuya does not disclose or suggest that the electrode forming sheet contains an alcohol-based solvent having 2 to 10% by weight (or 3 to 6% by weight, as set forth in dependent Claim 7) of the electrode-forming sheet. Instead, the Office Action asserted that one skilled in the art using the disclosure found in Shibuya would have be able to arrive at Applicants' claimed inventions by routine experimentation. Applicants respectfully disagree with this assertion.

The Office Action also states that the double layer capacitor of Shibuya contains an alcohol-based solvent in the electrode-forming sheet *while joining* the collector sheet and the electrode-forming sheet, based on the disclosure in the abstract regarding kneading a mixture of active carbon powder, carbon black, and polytetrafluoroethylene with ethanol before rolling the mixture to form an electrode sheet. However, the disclosure of Shibuya only indicates the presence of the solvent during the kneading step. Applicants submit that Shibuya contains no disclosure to support the assumption made in the Office Action that alcohol-based solvent is actually present *while joining* the collector sheet and the electrode-forming sheet.

Paragraph [0025] of Shibuya discloses a production process for an electrode, and a drying process for the electrode. It does not disclose whether the electrode contains solvent during the process of joining the electrode sheet and the collector. Paragraph [0029] of Shibuya discloses that the electrode is cut into a certain shape after the electrode is rolled to form a sheet. This disclosure suggests that the electrode sheet is dry, because wet raw material cannot be cut into a certain shape. Even if the electrode is wet during cutting (*i.e.*, solvent is present), Shibuya does not disclose or suggest that the range of solvent contained in the electrode forming sheet is 2 to 10

weight % during the step of joining the electrode with the collector, as is set forth in the presently claimed invention. Further, paragraph [0026] of Shibuya discloses a process in which the electrode raw material is dispersed to make a slurry, and the slurry is coated on a collector having a conductive adhesive on its surface. In this process, the electrode is directly formed on the collector. This is in contrast to the presently claimed invention, in which the electrode sheet is formed and rolled, and then the electrode in which solvent is contained is joined with collector.

Accordingly, Applicants submit that Shibuya does not disclose or suggest all of the features of Claims 1, 2, and 7 of the presently claimed invention.

**Translation of Paragraphs [0025] and [0026] of Shibuya**

Because the computer generated translation of Shibuya was somewhat unclear with respect to the translation of paragraphs [0025]-[0026], Applicants provided the following translation of those paragraphs in order to further clarify the differences between Shibuya and the presently claimed invention:

[0025] It is desirable that the electrode is joined to the collector via conductive adhesive after the electrode is formed into sheet. As a production method of the electrode, for example, a mixture of activated carbon powder, carbon black, fluorine containing resin and liquid lubricant is kneaded and rolled to form into sheet. The conductive adhesive is beforehand coated on the collector, then the sheet electrode is put thereon and pressed. The collector and the electrode can be strongly joined by hardening the conductive adhesive by drying desirably at more than 150°C and more desirably in reduced pressure. It is desirable that the drying is performed at 150 to 170°C to improve productivity.

[0026] Furthermore, the electrode can also be produced by a following process. The fluorine containing resin is dissolved in the solvent, the carbon material is dispersed in the solution to make slurry and the slurry is coated on the collector. Also in this case, it is desirable that the slurry is coated on the collector whose surface is beforehand coated with

the conductive adhesive, and then drying is performed at more than 150°C, in particular in reduced pressure.

**Shibuya Contains No Suggestion Or Motivation To Modify Its Disclosure**

The electronic translation of Shibuya discloses that it solves the problem of degradation of performance caused by the presence of moisture in the interior of an electric double layer capacitor, which is encountered when using conventional techniques, and that “there is very little moisture in an electrode” formed by the method disclosed in Shibuya. See paragraph [0008].

One skilled in the art having the disclosure of Shibuya before him would therefore not be motivated to modify that disclosure to ensure that the electrode forming sheet contains from 2 to 10% by weight of an alcohol-based solvent when joining the collector sheet and electrode forming sheet.

**There Is No Reasonable Expectation of Success**

The disclosure of Shibuya regarding the performance degradation problems caused by the presence of moisture in the interior of an electric double layer capacitor teaches away from the proposed modification, and does not provide one skilled in the art with a reasonable expectation of success in forming an electric double layer capacitor by providing from 2 to 10% by weight of an alcohol-based solvent in the electrode forming sheet.

**No Prima Facie Case of Obviousness Has Been Established**

For the reasons set forth above, Applicants submit that a *prima facie* case of obviousness has not been established. The inventions set forth in Claims 1, 2, and 7

are not disclosed or suggested by Shibuya, and Applicants therefore respectfully request that this ground of rejection be withdrawn.

**Conclusion**

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejection, allowance of Claims 1-2 and 5-15, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 108421.00084.**

Respectfully submitted,  
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